James R. Gavin III, MD, PhD—A Humble and Remarkable Trailblazer, Scientist, Advocate, Mentor, and Educator for Diabetes

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Diabetes Care 2015;38:963–967 | DOI: 10.2337/dc14-3035

James Raphael Gavin III, MD, PhD, represents the quintessential scientist, educator, trailblazer, and type of leader most people aspire to become. The breadth and depth of his contributions to the scientific and medical community in the area of diabetes are unparalleled, while his passion has pushed him to unprecedented heights in American medicine. His original research as a young investigator at the National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health (NIH) has greatly contributed to our understanding of insulin receptor binding and function. This factor advanced the understanding of the mechanism of insulin resistance and the role of hyperinsulinemia in obesity and type 2 diabetes. These observations have become the pathophysiologic hallmarks of both diseases.

THE EARLY YEARS—BECOMING AN EMINENT PHYSICIAN-SCIENTIST

James R. Gavin III was born 23 November 1945 in Mobile, Alabama, the fourth of James R. Gavin II and Bessie Smoke Gavin's seven children. Gavin's father worked for the shipbuilding company in Mobile doing welding and sandblasting, and he eventually became a self-made chemist.

As a child Gavin played sports and "went to church a lot." Because he was a precocious child and easily bored with kindergarten, he started public school at an early age, attending segregated public schools (in Mobile). "[I] had the most fantastic teachers and educational experience at all levels, including opportunities to pursue a number of extracurricular activities," said Gavin. One particular highlight was meeting Rev. Dr. Martin Luther King Jr. As a high school freshman, he was selected to give the Gettysburg Address at the annual Emancipation Proclamation celebration in Mobile, where Dr. King was the keynote speaker. Gavin said, "I sat mesmerized behind him as he spoke for almost 90 minutes in spellbinding fashion, without a single note! I will always remember that event and always cherish that he leaned over to me after my presentation and said, 'That was very well done, young Gavin, great job!'"

Gavin's first interest was in research and running a laboratory, "but while researching insulin receptors at the NIH . . . I started learning about diabetes," he said. "It was clear that this was what was responsible for the death of my great-grandmother Rennie Lee when I was a kid. It was also clear that the problem affected many members of my family and was common among African Americans." With this in mind, he decided to focus his research on diabetes. Realizing he lacked the right tools, he found himself headed back to medical school.

James R. Gavin III

Gavin met his future wife, Annie Ruth Jackson, in 1965 while attending Livingstone College in Salisbury, North Carolina. He was at first surprised that the cute freshman was not impressed by his approach. Gavin recalls, "I introduced myself in the hopes of initiating an agreeable conversation, and she promptly indicated that she would simply rather not be bothered. Since I was not only a senior but president of the student council, president of my fraternity, captain of the tennis team, an honor student, and a pretty popular guy, I thought she

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would be thrilled at some interest from me! I had to work at it."

He graduated magna cum laude in 1966 and continued on to earn a PhD in biochemistry from Emory University in 1970. He and Annie were married in June 1971.

They are proud parents of three adult sons: Rapheal, a project manager for Kaiser Permanente; Lamar, who works in distribution for Walmart; and Arthur, a mechanical engineer with the Army Corps of Engineers. They also have one granddaughter—Rachael—and another grandchild on the way. Annie was an educator, having taught kindergarten through college at some point in her career, ending her tenure in education as an elementary principal. While she is officially retired, she now "works" as Dr. Gavin's assistant—no small task! The couple will celebrate 44 years of marriage in June.

In 1972, Gavin joined a prestigious laboratory at NIH as a research fellow, where Drs. Jesse Roth and Phillip Gorden served as his research mentors. At the start of the receptor revolution, NIH's Diabetes Branch was in the vanguard with its studies of the newly discovered insulin receptor. The early studies in animals used the classic targets for insulin—liver, muscle, and fat. Dr. Gavin was a leading member of the team that catalyzed the move of the studies into humans and was among the pioneers in investigating the presence of insulin receptors on circulating and tissue cells and the factors that regulate insulin receptors and their binding capacity (kinetics) (1–6). His research demonstrated that circulating lymphocytes and monocytes as well as fibroblasts and adipocytes have insulin receptors that are negatively regulated by the prevailing insulin levels (7–10). He also demonstrated that hyperinsulinemia leads to downregulation of insulin receptor binding capacity and numbers, supporting the concept of negative cooperativity (7,8). One of his articles during this period, which showed that insulin downregulates insulin receptors in cultured cells, became a highly cited article (7). He was part of the group that showed that common conditions associated with insulin resistance (e.g., obesity, acromegaly, and glucocorticoid excess) had a diminution in insulin binding to insulin receptors. These landmark observations were among the first to demonstrate the role of hyperinsulinemia in insulin resistance that plays pathogenic role in obesity, metabolic syndrome, polycystic ovary syndrome, and type 2 diabetes.

The significance of Dr. Gavin's contributions during his tenure at the Diabetes Branch is best summarized by his former mentor, Dr. Jesse Roth:

> As a varsity member of our NIH team, Jim played a major role as a pioneer introducing and elucidating disorders in humans where the insulin receptor played a major role—the first disorders of any cell surface receptor. The principles established here were excellent models for disorders of many other receptor systems (e.g., anti-TSH receptors in Graves [disease], genetic defects in LDL receptors).

During his time at NIH, he was also a lieutenant commander in the U.S. Public Health Service, where he continued to serve as a reserve officer for years. He went on to Duke University School of Medicine, where he received an MD degree in 1975 and became an intern/resident pathologist at Duke University Hospital from 1975 to 1976. He subsequently completed his internal medicine internship (1976–1977) and residency (1977–1978) as well as a clinical fellowship in metabolism (1978–1979) at Washington University Barnes Hospital, St. Louis, Missouri.

In 1979, Dr. Gavin joined the faculty of Washington University School of Medicine, St. Louis, Missouri, as an assistant professor of medicine. During that time, his research focused on IGF-II and he demonstrated that IGF-II also competitively binds to its receptors with similar metabolic actions as insulin binding to its receptor (11–14). Dr. Gavin and his team showed that one of the major postreceptor actions of insulin receptor binding is stimulation of intracellular phosphorylation and pyruvate production (15–17). He has published more than 200 articles and abstracts in prestigious peer-reviewed journals, including *Science*, *Proceedings of the National Academy of Sciences*, *Journal of Applied Physiology*, *Diabetes, American Journal of Physiology*, *Journal of Clinical Investigation*, and the *Journal of Clinical Endocrinology and Metabolism.*

As a result of his pioneering work, he rose to associate professor of medicine in 1985 and was elected to the American Society for Clinical Investigation. In 1987, Dr. Gavin was appointed director and chief of the Diabetes Section, acting chief of the Section of Endocrinology, Metabolism and Hypertension, and the William K. Warren Professor for Diabetes Studies at the University of Oklahoma Health Sciences Center in Oklahoma City. His outstanding scientific contributions led to his election to the Association of American Physicians (1992) and to the prestigious Institute of Medicine of the National Academies (1996) (Table 1).

Table 1—Awards and honors

Scientific and medical honor societies	Institute of Medicine American Society for Clinical Investigation Association of American Physicians Alpha Omega Alpha Honor Medical Society
Leadership honor societies	Omicron Delta Kappa Honor Society Sigma Pi Phi Leadership Fraternity
Distinguished alumni awards	Distinguished Alumni of Duke University Medical School Emory University Medal for Distinguished Achievement
ADA awards	Clinician of the Year 1991 Banting Medal for Distinguished Service
Honorary degrees	Doctor of Science, Livingstone College and Hood Theological Seminary (1999) Doctor of Science, Morehouse School of Medicine (2000)
Other awards and honors	Daniel Hale Williams Award E.E. Just Award Herbert W. Nickens Award Daniel Savage Memorial Award

Dr. Gavin has served and been recognized by the American Diabetes Association (ADA) for his scientific and clinical achievements. He was named Clinician of the Year in 1991, served as president of the ADA (becoming the first African American ADA president) from 1993 to 1994, and received the Banting Medal for Distinguished Service. During his ADA presidency, his platform focused on dissemination of the findings and clinical implementation of the Diabetes Control and Complications Trial findings, expansion of research opportunities for investigators interested in diabetes research, expansion of fundraising for research and for creation of minority outreach programs, and development of targeted diabetes awareness and education programs in minority communities.

MENTOR TO FUTURE GENERATIONS OF PHYSICIAN-SCIENTISTS

Nowhere have the fruits of his labor as a mentor been more manifest than in his outstanding contributions at the Howard Hughes Medical Institute (HHMI) and to the Robert Wood Johnson Foundation (RWJF) Harold Amos Medical Faculty Development Program.

Managing the Nation's Old and New Generations of Scientists—HHMI

In 1991, Dr. Gavin was appointed as senior science officer for HHMI where he shouldered the enormous responsibility for managing the prestigious HHMI researchers and scientists in both the U.S. and abroad. In this role, he ensured that the researchers, the nation, and the world benefited from the successes, discoveries, and innovations of HHMI's talented researchers. In 2000, he was promoted to director of HHMI-NIH Medical Research Scholars Program, where he assumed responsibility for overseeing the "young" scientists and talented investigators program to ensure that we have a continuing pipeline of capable scientists for future medical research, not only in HHMI but also in academic institutions and the pharmaceutical industry.

Building a New Generation of Minority Scientists for the Nation—RWJF Harold Amos Medical Faculty Development Program

Dr. Gavin has been a champion and strong advocate for increasing the minority research workforce capacity. He has served on several NIH, private, and governmental committees to advocate and fight for inclusion of minorities in sensitive and strategic areas of diabetes research as well as to create access to, infrastructure for, and resources for research. This has been most successfully achieved by his 20-year tenure as director of the RWJF Harold Amos Medical Faculty Development Program, one of the longest-running minority national faculty building and development programs in the country. This extraordinary program, initially directed by Dr. Harold Amos (1989–1993) and then directed by Dr. Gavin (1993–2013), celebrated its 30th anniversary in 2013. Under Dr. Gavin's leadership, the Harold Amos Medical Faculty Development Program has uniquely fostered diversity among U.S. medical school faculty. In acknowledging Dr. Gavin's accomplishments as the outgoing director after 30 years, Dr. Risa Lavizzo-Mourey, MD, MBA, president and chief executive officer of the RWJF noted:

> James Gavin has been instrumental in the Harold Amos program's indelible impact on academic medicine. Under Dr. Gavin's guidance, over 200 physicians and dentists from disadvantaged backgrounds have been readied to become leaders in the field of academic medicine and to foster the next generation of leaders as well. Most importantly . . . three program alumni are now directors of Institutes within the National Institutes of Health and chairpersons of departments and division directors in several prestigious medical institutions.

In departing comments, Dr. Gavin said:

> It has been an immeasurable honor to play a part in realizing the Harold Amos program's goal of building and developing a cadre of brilliant young physicians and dentists who go on to make significant contributions to the field of academic medicine. Our scholars and alumni make up one of the richest endowments of human capital with which I have ever been affiliated. Being part of that for three decades has helped fulfill my commitment to develop programs that create sustainable, positive change.

Contributing to the Development of Minority Physicians

From 2002 to 2005, Dr. Gavin served as the president of Morehouse School of Medicine in Atlanta, Georgia, one of three current historically black medical schools in the U.S.

GIFTED TEACHER—BUILDING DIABETES EDUCATION CAPACITY FOR THE NATION

Dr. Gavin has been a strong and passionate advocate for patients with diabetes. In this context, he served as cochair (along with Charles Clark Jr., MD) for the NIH/Centers for Disease Control and Prevention National Diabetes Education Program (NDEP). NDEP was the first national coalition of community organizations and companies that came together to champion and develop new strategies for changing diabetes education at the community level. The initial goal of NDEP was to promote and promulgate diabetes from a covert to overt disease by reaching out to people with diabetes and those at risk, as well as health care professionals. Under the leadership of Drs. Gavin and Clark, NDEP mounted a campaign to promote public awareness that type 2 diabetes is a serious, common, and costly disease but also one that is controllable and preventable. NDEP developed an impressive library of evidence-based, culturally tailored, culturally sensitive, culturally relevant, and simple, easy-to-read materials on diabetes prevention and control. Furthermore, under their leadership, NDEP established itself as a dominant resource for diabetes information in numerous languages ranging from English to Spanish to Samoan with emphasis on different cultures. Among its successes, NDEP built stronger partnerships with its mandate to "promote" diabetes awareness and can boast of more than 100 materials and tool kits that support the two main themes and messages: "Control Your Diabetes. For Life" and "Small Steps. Big Rewards. Prevent Type 2 Diabetes." NDEP now comprises more than 200 partner organizations. With its extensive network, NDEP has engaged in a mission to ensure that its message reaches people at risk for type 2 diabetes, health care professionals to provide resources for better patient care and outcomes, and health care stakeholders and third-party payers to

highlight the financial challenges associated with diabetes.

Apart from NDEP, Dr. Gavin has committed himself to educating members of both professional and nonprofessional organizations, including churches and the general population in diabetes. He has also been involved in diabetes education in Africa, Europe, India, and the Far East. There are only a few diabetes educators who can match the global and international stature similar to that of Dr. Gavin. This unparalleled commitment of more than 40 years requires an individual such as Dr. Gavin with the passion and dedication to reaching those affected by diabetes.

ADVOCACY FOR DIABETES AND GOVERNMENTAL POLICIES FOR HEALTH PROMOTION

Dr. Gavin is a strong advocate for patients with diabetes and obesity as well as organizations and agencies that support and champion the care of patients with diabetes and their family members, as was highlighted in his ADA presidential lecture 20 years ago. Furthermore, Dr. Gavin has testified at congressional and court hearings regarding diabetes and health-related policies and discrimination. He was a medical expert who testified in the historic and landmark case *Kapche v. Holder*, in the DC District Court in May 2009. In acknowledgment of his successful effort and contribution, ADA noted:

> Dr. Gavin played a critical role as medical expert in *Kapche v. Holder*, a case that involved a challenge to the Federal Bureau of Investigation's [FBI's] hiring policies for people with insulin-treated diabetes . . . When Jeff Kapche was told the FBI wouldn't hire him as a Special Agent because he manages his diabetes with injections rather than an insulin pump," Dr. Gavin responded to a request from Kapche's lawyers to help as a medical expert. Gavin helped lawyers establish that Kapche's diabetes was not a disability under federal law.

As a result of this landmark case, Dr. Gavin, along with the rest of the Kapche litigation team, received the ADA Public Policy Leadership Award in 2010 for his work in defending the right of people with diabetes to live free of discrimination. It took an individual with Gavin's stature, critical thinking skills, and passion for equal rights for individuals with diabetes to assist in the "defeat" of the powerful governmental legal team.

Dr. Gavin currently serves as chairman of the board of directors for the Partnership for a Healthier America. Led by Honorary Chair First Lady Michelle Obama, the partnership is devoted to collaborating with the private sector to help solve our nation's obesity crisis in youth by making healthier choices and physical activity more affordable and accessible to families and children across the country. In this role, Dr. Gavin is ensuring the metabolic health of future generations.

ENTREPRENEUR AND SERVANT

While most of us have a unidirectional gift and ability, it is rare to see someone who has multiple talents and gifts as a scientist, researcher, advocate, teacher, administrator, and, also, entrepreneur. His vision to improve the care of diabetes and contribute to its cure has led him to take various leadership roles. From 2005 to 2007, he served as executive vice president of clinical affairs at Healing Our Village, Inc., a corporation that specializes in targeted advocacy, training, education, disease management, and outreach for health care professionals and minority communities. Today, Dr. Gavin serves as chief executive officer and chief medical officer of Healing Our Village, Inc., where he continues to make an impact on the minority diabetes community. He has also served as a trustee of the RWJF as well as at each of his three alma maters—Livingstone College, Emory University, and Duke University.

PERSONAL: WHAT MAY NOT BE KNOWN ABOUT DR. GAVIN

It may surprise people that Dr. Gavin is a prior college athlete who was a "miler," and rumor has it, he won a yo-yoing championship! While many know that he absolutely loves golf, he also enjoys reading fantasies, repairing things (cars, furniture, books, bags, clothing, etc.), playing trivia, and watching the Discovery channel. He is also quite adept at woodworking and cooking. He inherited his love of woodworking from his father. "My father was a terrific craftsman and had many tools and used to make wooden toys for us," said Dr. Gavin. Over the years, Dr. Gavin has designed several special pieces for display, small specialty items of furniture, and picture frames.

His interest in the culinary arts began at age 10. As both of his parents worked, it was not unusual for him, as the oldest boy and the first to arrive home in the afternoon, to finish dinner for his younger brothers. He found he liked cooking and began more careful observation of his mother's culinary skills. By the time he was in high school, he had assumed more independence and initiative in the kitchen. "It's an endeavor that I love," he said. He will occasionally take over the kitchen but more for specialty dishes than anything else as "Ann is a fantastic cook and enjoys it very much. Most recently I made a large pot (approximately 6 liters) of seafood gumbo, which was a big hit!"

MAN OF MANY TALENTS

In summary, Dr. Gavin's incredible accomplishments and legacy remain as indelible achievements for today and the future. Clearly, Dr. Gavin is a trailblazer, scientist, educator, and thought leader in diabetes. Throughout his career, he has served as an outstanding mentor and role model for future generations of diabetes physician-scientists and an advocate for patients suffering with diabetes. And above all, he is a real

James and Annie Gavin, 1969

Dr. Gavin with one of his woodworking projects

gentleman and a Renaissance man who speaks French and has a beautiful singing voice.

All those whose lives have been touched by Dr. Gavin have been truly enriched.

Acknowledgments. The authors thank Dr. Jesse Roth, professor of medicine and investigator & head, Laboratory for Diabetes and Diabetes-Related Research, The Feinstein Institute for Medical Research, for contributing information about Dr. Gavin's early scientific career at the NIH. The authors thank Mrs. Nina Ardery, deputy director for the RWJF Harold Amos Medical Faculty Development Program, for her assistance in gathering information relevant to this program.

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